California Regional Water Quality Control Board
North Coast Region

ORDER NO. R1-2002-0089
(MODIFYING ORDER NO. R1-2002-0030)

WDID NO. 1A99019RSIS

WASTE DISCHARGE REQUIREMENTS

FOR

CALPINE CORPORATION/CPN TELEPHONE FLAT, INC.
FOURMILE HILL GEOTHERMAL EXPLORATION DRILLING PROJECT
GLASS MOUNTAIN KNOWN GEOTHERMAL RESOURCE AREA
AND
U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
AND
U.S. DEPARTMENT OF INTERIOR, BUREAU OF LAND MANAGEMENT

Siskiyou County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter Regional Water Board), finds that:

1. Calpine Corporation/CPN Telephone Flat, Inc., (hereinafter Discharger), 10350 Socrates Mine Road, Middletown, CA 95461, is proposing a geothermal exploratory well drilling project consisting of drilling and testing on portions of geothermal lease CA 21926 located in the Glass Mountain Known Geothermal Resource Area. This drilling project, known as the Fourmile Hill Geothermal Exploration Drilling Project (hereinafter Fourmile Hill Exploratory Project), will be conducted on public land in the Klamath National Forest, administered by the U.S. Department of Agriculture, Forest Service, (USFS) and U.S. Department of Interior, Bureau of Land Management (BLM). USFS and BLM are identified as co-dischargers because they are designated by the United States to manage the Fourmile Hill Exploratory Project lands.

2. The Discharger submitted a completed Report of Waste Discharge (ROWD) dated February 23, 1999, for construction and testing of up to five geothermal exploratory wells. The Discharger subsequently narrowed the definition of the Fourmile Hill Exploratory Project to consist of two proposed wells that would be drilled on two of three well pads, 88-28 and 18-28 or 84-28. Geothermal flow testing of these two wells would also be conducted as part of the Fourmile Hill Exploratory Project.

3. On June 27, 2002, the Regional Water Board adopted Waste Discharge Requirements (Order R1-2002-0030) for the Fourmile Hill Exploratory Project geothermal drilling and flow-testing operations.

4. On July 18, 2002, Calpine Corporation submitted a request to modify Order R1-2002-0030. The ROWD was determined to be complete on August 26, 2002. The August 26, 2002 ROWD proposed to change Specification B.2 to allow reinjection of geothermal fluids into wells other than those specified by Order R1-2002-0030. Order R1-2002-0030 included Specification B.2 because the impacts of transferring geothermal fluids to wells located outside the Fourmile Hill Exploratory Project Area were not evaluated in California Environmental Quality Act (CEQA) documents prepared for the Fourmile Hill Exploratory Project. An Environmental Assessment/Initial Study (EA/IS) and Mitigated Negative Declaration (2002 MND) for the Glass Mountain Exploratory Project adopted by the County of Siskiyou Air Pollution Control District (CSAPCD) in July 2002 concludes that impacts of transferring geothermal fluids to exploration wells located in the Central Valley would be less than significant.

5. The August 26, 2002 ROWD also proposed to change the name of the principal discharger named in Order No. R1-2002-0030. The ROWD proposed to add CPN Telephone Flat, Inc. CPN Telephone Flat, Inc., which is a wholly-owned subsidiary of Calpine Corporation, functions as the operator of geothermal exploratory activities in the Fourmile Hill Exploratory Project Area. Calpine Corporation holds title to geothermal leases in the Fourmile Hill Exploratory Project Area.

6. This Order incorporates the modifications set forth in the August 26, 2002 ROWD into Order R1-2002-0030. It also makes other nonsubstantive editorial modifications to Order R1-2002-0030.

7. This Order regulates activities associated with waste treatment and disposal activities for the construction of two exploratory wells at locations 88-28 and 18-28 or 84-28. This Order does not regulate geothermal production activities. Any proposed geothermal production activities could be conducted only after issuance of a separate set of Waste Discharge Requirements at a later date.

8. The proposed wellfield area is located in Section 28, Township 44 North, Range 3 East, Mount Diablo Base and Meridian (MDB&M), Siskiyou County. The well locations have been given identification numbers 88-28 and either 18-28 or 84-28. The exploratory wells are located approximately three miles northwest of Medicine Lake as shown on Attachments A, B and C incorporated herein and made part of this Order.

9. Wastes produced during drilling operations consist of silt, soil, rock cuttings, drilling muds with additives, oil, and associated wastewater. The drilling mud is

an inert mineral clay, such as bentonite clay or a similar clay. Drilling mud additives do not render drilling muds or fluids hazardous when additives are used according to manufacturer's specifications. Additives may include sodium bicarbonate, sodium hydroxide, soda ash, drilling soap, organic polymers, wood fibers, graphite, cottonseed hulls, walnut hulls, and cement.

10. Drilling mud, aerated mud and/or air will be the media utilized during the drilling process to transport solids to the surface. Drilling mud will be treated and contained in a closed system for continuous circulation by utilizing metal tanks. Auxiliary tanks will be utilized to collect any extraneous rig runoff and wash water used for separating solid drill cuttings. Excess cement slurry will be directed to a separate metal waste tank where it will be chemically retarded for removal to the solids sump.

11. Solids will be mechanically separated, washed, and deposited into lined pits (approximately 187,000 gallons (gal) capacity each), located at each drilling pad. Following exploratory activities, dry solids will be sampled, analyzed to verify non-hazardous condition, and buried in-place within the solids disposal pit. Solids identified as hazardous will be transported and disposed in a legal point of disposal.

12. Bore cleanout/flow tests will be performed at completion of drilling to clean the well bores of any drilling cuttings/mud or other agents capable of restricting flow capabilities. Fluids from this cleanout procedure will be confined in a lined 750,000-gal sump. This sump will be constructed with a certified clay layer and tested to ensure a permeability of less than $1x10^{-6}$ centimeters per second (cm/sec) for minimum one-foot thickness. Alternatively, an equivalent synthetic liner meeting the permeability specifications could be used. At completion of drilling/testing fluids in the sump will be returned to deep test wells for injection. Residual fluids and/or accumulated solids in the sumps will be sampled and analyzed to confirm nonhazardous conditions. The sumps will be emptied of any residual fluids and back filled if nonhazardous conditions are confirmed. If residual waste is confirmed hazardous, it will be removed and transported to a legal point of disposal prior to backfilling the sump excavations.

13. Geothermal fluids will be reinjected into the wells where they were generated, or other existing exploration wells screened at a similar formation (fluids may be injected into existing wells shown to have continuity in the geothermal reservoir with source wells). Geothermal fluids will be transported from source to injection wells using a temporary pipeline. The temporary pipeline will be tested prior to transfering geothermal fluids to ensure that leaks do not exist. During operations, the pipeline will be monitored for leaks. Minor leaks will be repaired in place while fluids continue to be pumped. Major leaks will require pump shut down.

14. Project documentation and area maps depict surface drainage in the Fourmile Hill Exploratory Project Area as consisting of minor ephemeral streams and/or swales. These surface drainage courses flow subsurface before reaching any higher order streams. Willow and Antelope Creeks are the two subwatersheds located within closest proximity to the Project Area and both are a minimum of five air miles away. The wellfield is located entirely outside the Medicine Lake caldera (a crater formed by the collapse of the central part of a volcano having a diameter many times that of the vent).

15. Annual precipitation range for the Fourmile Hill Exploratory Project Area is listed at 35 to 45 inches with an average of approximately 43 inches per year. Precipitation occurs mostly as snow. Soils in the Fourmile Hill Exploratory Project Area are described as well-drained to excessively-drained sandy loams that formed in materials weathered from extrusive igneous (volcanic and granitic) rocks overlaid by young pumice and ash deposits.

16. Groundwater table on the flanks of the Medicine Lake caldera, which includes the Fourmile Hill Exploratory Project Area, is described as erratic, varying from about 300 ft to an excess of 1000 ft below ground surface. Within the caldera area of the Medicine Lake Highlands, the depth to the first major aquifer is generally 200 ft below ground surface.

17. Fresh water for use during the exploration well drilling activities will be acquired from source wells located in the Arnica Sink northeast of Medicine Lake. Water will be delivered to the area of operations via a temporary unburied pipeline, hand-laid along existing roads, or by tanker trucks. The delivery pipe system should not require construction activities and will be removed prior to the winter period.

18. The beneficial uses of surface waters within the Fourmile Hill Exploratory Project Area include noncontact recreation and preservation and enhancement of wildlife and other aquatic resources. Beneficial uses of groundwater within the Fourmile Hill Exploratory Project Area include domestic and industrial water supply.

19. The proposed Fourmile Hill Exploratory Project should have no adverse impacts to surface water or groundwater. Geothermal wells are cased to prevent well bridging due to formation sloughing. Liquid phase water is heavier than the steam and will not rise to the surface until it flashes to steam. Drilling fluids may be lost during the drilling process in circumstances where rocks are permeable. Significant adverse impacts from drilling fluid loss will not occur because drilling fluids are composed of nontoxic constituents.

20. The discharge of drilling mud and cuttings from well drilling operations to an on-site sump is exempt from the provisions of Title 27, of the California Code of

Regulations (CCR), as set forth in Section 21565 in Title 27. The exception, pursuant to Section 20090 (g), applies to operations where:

a. Discharges are to on-site sumps and do not contain halogenated solvents, and
b. The Discharger removes all wastes from the sump, and
c. The Discharger removes all free liquid from the sump and covers residual solid and semi-solid wastes, provided that representative sampling of the sump contents after liquid removal shows residual solid wastes to be nonhazardous. If the sump has appropriate containment features, it may be reused.

21. In 1995, the BLM and CSAPCD prepared an EA/IS for the exploratory drilling operations in compliance with the National Environmental Policy Act and the California Environmental Quality Act (CEQA) (Pub. Resources Code, 21000 et seq.). The EA/IS states the Fourmile Hill Exploratory Project will not cause significant impacts to water quality. On April 30, 1999, the CSAPCD adopted a Mitigated Negative Declaration (1999 MND) for the Fourmile Hill Exploratory Project pursuant to CEQA. The CSAPCD determined that the Fourmile Hill Exploratory Project will not have a significant effect on the environment. The Regional Water Board has reviewed these environmental documents and determined compliance with these requirements will mitigate any potential adverse water quality impacts.

22. Interested persons have contended that the availability of new information concerning the environmental impacts of the project requires preparation of a new environmental document under CEQA to supplement the 1999 MND. As explained by the California Supreme Court, CEQA generally disfavors revisiting the analysis of environmental effects after an environmental document has been approved for a project. (*Laurel Heights Improvement Association of San Francisco, Inc. v. Regents of the University of California* (1993) 6 Cal.4th 1112, 1130.) Accordingly, when acting as a responsible agency, the Regional Water Board is ordinarily prohibited from modifying the analysis or conclusions of a previously adopted environmental document. (Pub. Resources Code, sections 21167.2 & 21167.3.) One instance justifying modification is where substantial evidence indicates changed circumstances showing a "substantial increase in the severity of [a] previously identified significant effect." (Pub. Resources Code, section 21166; Cal. Code Regs., tit. 14, section 15162(a)(2) see also *Snarled Traffic Obstructs Progress v. City & County of San Francisco* (1999) 74 Cal.App.4th 793.)

23. The Regional Water Board cannot supplement the 1999 MND on the following topics as requested by interested persons:

2001 Drought Conditions: A comment contends that the 1999 MND must be supplemented to adequately account for worsened groundwater impacts caused by drought conditions in 2001 and 2002. Based on the EA/IS and other information in the record, there is no evidence that the impact of temporary groundwater pumping will substantially increase in severity. The EA/IS considered the effect of groundwater pumping on the level of Medicine Lake and determined (1) that a hydraulic connection between groundwater and Medicine Lake could not be discerned from available information and (2) assuming such a connection exists the extraction would not perceptibly affect lake levels because it would occur over a five-month period at a distance of 1.1 miles from the lake. The Regional Water Board therefore finds that the information presented by the commenter does not show that the impact of groundwater use is more severe than evaluated in the Mitigated Negative Declaration and that it cannot supplement the analysis of impacts as requested.

Cumulative Impacts of Exploratory Drilling South of Fourmile Hill: A comment contends that the 1999 MND is insufficient because it does not analyze the cumulative effect of the project by CPN Telephone Flat, Inc., (CPN) to drill more exploratory wells south of Fourmile Hill (the Glass Mountain Exploratory Project). The 2002 Draft EA/IS for the Glass Mountain Exploratory Project concludes that the drilling of these wells would not occur simultaneously with the wells in Fourmile Hill. The 2002 Draft EA/IS also determines that the cumulative impact of Fourmile Hill and CPN exploratory projects on groundwater would be less than significant for several reasons: (1) the amount of water required would be relatively small; (2) withdrawals would occur over a short period (approximately 6 months per year for two years (2002 and 2003)); and (3) previous withdrawals associated with geothermal drilling have not caused significant effects on groundwater quantity or quality. The Regional Water Board therefore finds that the information presented by the commenter does not show that the cumulative impact on groundwater is more severe than evaluated in the Mitigated Negative Declaration and that it cannot supplement the analysis of impacts as requested.

Cumulative Impacts of Telephone Flat Development Project: A commenter contends that the 1999 MND must consider the Telephone Flat Development Project, which was previously denied in 2000 by BLM and USFS. A cumulative impacts analysis must consider only "probable future projects." (Cal. Code Regs., tit. 14, section 15130.) A "probable future project" is, for example, one for which an application is pending. In the case of the Telephone Flat Development Project, the BLM and USFS previously denied the project "due to potential impacts of Native American use of the area, and to recreational users, which could not be mitigated." (2002 Draft EA/IS, p. 1-11.) California Energy General Corporation,

the project proponent, then sued BLM and the USFS, alleging breach of contract and an unconstitutional taking of private property. As part of the settlement of this litigation, BLM and the USFS agreed to reconsider their denials of the project. Although being reevaluated, because the Telephone Flat Development Project was previously denied, it is not a probable project. Regardless, as explained by the 2002 EA/IS, the Telephone Flat Development Project is "not expected to occur at the same time as the [Glass Mountain Exploratory] Project." Because the Fourmile Hill Exploratory Project will occur prior to the Glass Mountain Exploratory Project, the Telephone Flat Development Project would likely not contribute to effects on groundwater. Accordingly the Regional Water Board cannot supplement the 1999 MND as requested.

Additional Analysis of Traffic Conditions, Noise Levels, and Plant and Wildlife Surveys: A commenter suggests mitigation for traffic conditions, noise levels, and plant and wildlife impacts. Although it is unclear whether the comment is requesting that the 1995 EA/IS and 1999 MND be supplemented to address these concerns, the Regional Water Board cannot do so. New information can only trigger supplemental environmental review if it "was not known and could not have been known with the exercise of reasonable diligence at the time the previous . . . Negative Declaration was adopted . . . " (Cal. Code Regs., tit. 14, section 15162(a)(3).) There is no indication that the information identified by the commenter was not available at the time of the approval of the 1999 MND. Accordingly, the Regional Water Board cannot augment the 1999 MND.

Statement of Declaration of Robert Curry: A commenter requests that the Regional Water Board require supplemental environmental analysis to consider the Statement of Declaration of Robert Curry dated June 11, 1999. Although these writings were apparently submitted after the adoption of the 1999 MND by the APCD, they attack analysis in the 1999 MND. The adoption of the 1999 MND by the APCD on April 30, 1999, had the effect of requiring the Regional Water Board to accept the analysis and conclusions of the 1999 MND without question. (Pub. Resources Code, section 21167.2.) Accordingly, the Regional Water Board cannot require additional analysis as requested.

Cultural Resources: A commenter questions the validity of the analysis of impacts on cultural resources presented in the 1999 MND. In particular, the commenter argues that a supplemental document must be prepared to address the determination of the eligibility of the Arnica Sink area for listing on the National Register of Historic Places. Although the Fourmile Hill Exploratory Project Area has not been determined to be eligible, it still may be a "historical resource" entitled to special consideration under CEQA. (Cal. Code Regs., tit. 14, section 15064.5.) The area's high water quality, which is the crux of its cultural significance, would be protected by the WDRs. The WDRs include discharge prohibitions, specifications, and provisions that complement measures proposed in the project aimed at protecting water quality. Discharge prohibitions prohibit

the discharge of wastes characterized as designated or hazardous. The nature of the operations (drilling deep wells) does not allow characterization of generated wastes to be done prior to commencement of the project. For this reason all generated wastes will be contained in sumps with design specifications that prevent infiltration and subsequent contamination of local soils and groundwater. Discharge specifications specify design standards required to ensure no infiltration occurs during the short duration containment until wastes are appropriately characterized. For the purpose of the Fourmile Hill Exploratory Project, once wastes are characterized they will be disposed at a legal point of disposal.

The 1999 MND also requires implementation of the following mitigation measures to minimize impacts on water quality:

Mitigation Measure 4.3.1: The Discharger shall place drains or energy dissipaters at intervals along new access roads to allow water greater opportunities to exit the roadbed and percolate into the native soils, and prevent the discharge of large volumes of runoff at a few points along the road.

Mitigation Measure 4.3.2: The Discharger shall monitor new nonbladed roads for impacts to vegetation and increased runoff and erosion. If substantial impacts occur, the Dischargershall implement corrective actions. These measures could include construction of energy dissipaters, berms or culverts, or other appropriate runoff diversion structures.

Mitigation Measure 4.3.3: If a high volume of drilling mud is lost to the formation, the drilling contractor shall use Lost Circulation Material (LCM) to seal the well and reduce the migration of drilling mud into the formation. LCM can include constituents such as cottonseed hulls, wood chips, sawdust, etc. Alternatively, the contractor shall use air, foam, or aerated mud instead of LCM to reduce the lost circulation. These techniques would reduce lost circulation by reducing pressure in the hole.

The impacts of the project on water quantity are discussed above. The record indicates that the groundwater withdrawals for the project would not affect the level of water in Medicine Lake.

Because the WDRs and the mitigation measures required by the 1999 MND would protect water quality and because the project would not affect the level of Medicine Lake, the Regional Water Board cannot supplement the 1999 MND as requested.

Number and Size of Boreholes Per Well: A commenter argues that supplemental environmental analysis is necessary to evaluate increased impacts from changes in the proposed number and size of boreholes for each exploratory well. The

commenter referred to the March 2002 Plan of Operations, which is not for the Fourmile Hill Exploratory Project.

The Fourmile Hill Exploratory Project is regulated by a Plan of Operations submitted by the Calpine Corporation in September 1995 and approved by BLM in 1996. The commenter seems to believe that the boreholes are to be drilled at the surface. They are not. The drilling of multiple boreholes, which is an integral part of any geothermal exploration project, would only occur deep in the ground (minimum 3,800 feet below ground surface for this project). The commenter also implies that the drilling of boreholes is a change in the project. It is not. While the drilling of horizontal boreholes at depth is not specifically discussed in the 1996 Plan of Operations, Regional Board staff has confirmed that the proposal to drill these holes is not new because these holes are an integral part of any geothermal exploratory well. Accordingly, the project has not changed as the commenter contends. The number and size of boreholes at each well pad was therefore considered as an aspect of the Fourmile Hill Exploratory Project that was analyzed in the 1995 EA/IS and 1999 MND. The Regional Water Board cannot supplement the 1995 EA/IS and 1999 MND as requested.

24. The modification of R1-2002-0030 to allow the transfer of geothermal fluids to wells outside of the Fourmile Hill Exploratory Project Area does not require the preparation of a supplemental environmental document pursuant to CEQA. As noted above, CEQA generally disfavors revisiting the analysis of environmental effects after an environmental document has been approved for a project. (*Laurel Heights Improvement Association of San Francisco, Inc. v. Regents of the University of California* (1993) 6 Cal.4th 1112, 1130.) Accordingly, when acting as a responsible agency, the Regional Water Board is ordinarily prohibited from modifying the analysis or conclusions of a previously adopted environmental document. (Pub. Resources Code, sections 21167.2 & 21167.3.) One instance justifying modification is where "[s]ubstantial changes" are made to the project "which . . . involve[] . . . new significant environmental effects or a substantial increase in the severity of previously identified significant effects." (Pub. Resources Code, section 21166; Cal. Code Regs., tit. 14, section 15162(a)(1) see also *Snarled Traffic Obstructs Progress v. City & County of San Francisco* (1999) 74 Cal.App.4th 793.)

25. Transferring drilling fluids outside of the Fourmile Hill Exploratory Project Area would not result in new or more severe significant environmental effects than those identified in the 1999 MND. The 1999 MND evaluated the injection of drilling fluids produced from one Fourmile Hill Exploratory Project well into the other and concluded that the resulting environmental effects would be less than significant. The 2002 MND similarly concludes that impacts of transferring geothermal fluids from Glass Mountain Exploratory Project wells to exploration wells located in the Central Valley Region would be less than significant. Finally, both the 1999 MND and 2002 MND determined the impacts of constructing the

temporary pipelines for transporting water and drilling fluids for flow testing to be less than significant. Based on the foregoing, the Regional Water Board finds that the existing environmental documentation adequately evaluates the impacts of modifying Order No. R1-2002-0030 to allow export of geothermal drilling fluids for injection into existing geothermal wells in the Central Valley Region.

26. This project is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California.* The impact on existing water quality will be insignificant.

27. Construction activities for drilling pads and roads or utilities associated with the Fourmile Hill Exploratory Project will be conducted pursuant to provisions of the Statewide General NPDES Permit No. CAS000002 for Discharges of Storm Water Runoff Associated with Construction Activity, Order No. 99-08-DWQ.

28. The North Coast Regional Water Quality Control Board adopted the Water Quality Control Plan for the North Coast Region (Basin Plan) on December 9, 1993. The Basin Plan includes water quality objectives, implementation plans for point source and nonpoint source discharges, and statewide plans and policies.

29. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.

30. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

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THEREFORE, IT IS HEREBY ORDERED that Order R1-2002-0030 is rescinded.

IT IS FURTHER ORDERED that the Discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of any waste not specifically regulated by this Order is prohibited.

2. Creation of a pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code (CWC), is prohibited.

3. The discharge of drilling mud, petroleum products, or associated wastewater to land (other than tanks and sumps described in Finding Nos. 10 through 12), surface waters, or surface water drainage courses is prohibited.

4. The use of fluids generated during drilling/testing activities, for purposes other than specified by this permit, is prohibited. Specifically, the use of these fluids for dust control on access roads, well pads, or other developed project locations is prohibited.

5. Use of Enhanced Geothermal System testing techniques are prohibited, until a modified ROWD is submitted to the Executive Officer of the Regional Water Board (Executive Officer), describing any potential pollutants, and this Order is modified.

B. DISCHARGE SPECIFICATIONS

1. All construction spoils shall be adequately protected from erosion using applicable best management techniques no later than October 15th each year (assuming they will operate over more than one year) and shall be maintained throughout the wet weather season. Appropriate best management techniques for run-on controls shall be implemented on all construction spoils no later than October 15th each year and shall be maintained throughout the wet weather season. Total volume of disposed spoils shall be reported for each spoils disposal area.

2. All geothermal fluids produced during drilling or well testing shall be contained in tanks, lined pits, or other suitable containment structures. These fluids may be reinjected for disposal purposes into the same well or transferred for reinjection to other existing geothermal exploration wells screened in the same or equivalent formation containing similar fluids. Reinjection of fluids shall adhere to applicable U.S. Environmental Protection Agency guidelines and BLM's Geothermal Resource Orders. The geothermal fluids transfer pipeline shall be tested before fluid transfer commences to ensure that leaks do not exist.

3. An alarm or shutoff device shall be installed on the pump used in the geothermal fluid transfer pipeline. Pumping of geothermal fluids shall be suspended immediately following major pipeline failure. Appropriate control measures shall be implemented to prevent the installation and use of the pipeline from causing public nuisances. These shall include but not be limited to installing warning sings. The pipeline shall be inspected in its entirety for minor leaks, minimum two times per day. Minor leaks shall be repaired immediately upon being identified.

4. All wells shall be drilled and constructed to prevent degradation of groundwater or intermixing of groundwater from different aquifers.

5. All waste containment sumps shall be lined with certified compacted clay and tested to ensure the permeability is no more than $1x10^{-6}$ cm/sec and a minimum thickness of one foot, or an equivalent geosynthetic liner. If a geosynthetic liner is used, a suitable underliner shall be used to prevent liner damage. The liner used shall be tested to confirm that it meets permeability specification. Permeability test results shall be submitted to the Executive Officer prior to discharging waste to the sump.

6. Drill cuttings and other solids confirmed nonhazardous and not designated shall be dewatered before sumps are backfilled. Within 90 days following the completion of drilling operations, sumps shall be capped with one foot of clay having a permeability of no more than $1x10^{-6}$ cm/sec. A one-foot minimum thickness vegetative soil layer, that can support vegetation, shall be placed over the clay cap and shall be sloped to prevent surface water ponding.

7. Upon completion of Fourmile Hill Exploratory Project operations, representative samples of residual liquid and accumulated solids shall be obtained from all containment sumps. Analyses of the residue shall be submitted to the Executive Officer to demonstrate that it is compatible with on-site disposal as described in Finding No. 7. Wastes confirmed to be designated or hazardous as defined in CCR Titles 22, 23 and 27 shall be removed and transported to a legal point of disposal within 90 days after completion of Fourmile Hill Exploratory Project operations.

8. The Discharger shall submit to the Regional Water Board a monitoring plan intended to characterize (hazardous, designated, nonhazardous, inert) waste generated during the Fourmile Hill Exploratory Project. The monitoring report shall include field sampling procedures and laboratory analytical methods. The monitoring plan shall be submitted no later than seven calendar days after commencement of Fourmile Hill Exploratory Project operations.

9. A licensed Professional Civil Engineer or Certified Engineering Geologist, registered in the State of California, shall be responsible for conducting liquid containment sump design, material testing, construction, inspection, maintenance, and closure.

10. A minimum of two feet of freeboard (measured vertically) shall be maintained at all times at any sump containing fluid wastes to accommodate seasonal precipitation and to prevent overtopping from wind and wave action.

11. All sumps shall be backfilled and the ground graded to contour natural conditions within 90 days following completion of the Fourmile Hill Exploratory Project. If representative samples demonstrate that in-place wastes are nonhazardous and not designated, the solid residue may be compacted and buried pursuant to

DISCHARGE SPECIFICATIONS B.5. If the sumps cannot be closed and/or drill wastes cannot be removed from a well pad within the time period noted in DISCHARGE SPECIFICATIONS B.5, the Discharger shall provide sufficient information to the Regional Water Board, within 90 days of completion of well drilling operations, demonstrating why the sump cannot be closed and/or the drilling wastes removed and how these will be protected. Also, a time schedule for sump closure and drilling waste removal shall be provided by the Discharger and shall be approved by the Executive Officer. In no case shall sumps remain open more than one year after commencement of drilling operations.

12. All petroleum products, hydraulic fluids, drilling muds, and additives shall be stored and used in such a manner that all spills are contained. Handling and storage of fuel shall adhere to appropriate state and federal regulations. These regulations shall include California Aboveground Petroleum Storage Tank Act with 1991 amendments and the Environment Protection Agency's Oil Pollution Prevention regulations (40 CFR 112).

13. The Discharger shall remove and relocate any wastes that are discharged in violation of these requirements.

14. Waste produced during the drilling pad site preparation, road construction, and road maintenance shall be placed where it cannot be expected to enter waters of the State.

15. Waste confinement barriers shall be protected and maintained to ensure their effectiveness.

16. Suitable self-contained sanitary facilities shall be provided at each drilling site.

C. GENERAL PROVISIONS

1. Availability

A copy of this Order shall be kept at each Fourmile Hill Exploratory Project facility for reference by operating personnel at all times. Key operating personnel shall be familiar with its contents.

2. Severability

Provisions of these waste discharge requirements are severable. If any provision of these requirements is found invalid, the remainder of these requirements shall not be affected.

3. Responsibility

The USFS and BLM, as the administrators of the real property on which the discharge will occur, are ultimately responsible for ensuring compliance with these requirements, the Discharger retains primary responsibility for compliance with these requirements, including day-to-day operations and monitoring. Enforcement actions will be taken against the USFS and BLM only in the event that enforcement actions against the Discharger are ineffective or would be futile, or that enforcement is necessary to protect public health or the environment. As the USFS and BLM are public agencies, enforcement actions will be taken against them only after they are given the opportunity to use their governmental powers to promptly remedy the discharge.

4. Operation and Maintenance

The Discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed by the Discharger to achieve compliance with the waste discharge requirements.

5. Change in Discharge

The Discharger shall promptly report to the Regional Water Board any material change in the character, location, or volume of the discharge.

6. Change in Ownership

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which must be forwarded to the Regional Water Board:

a. existence of this Order, and
b. the status of the Discharger's annual fee account.

7. Vested Rights

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from his liability under federal, State, or local laws, nor create a vested right for the Discharger to continue the waste discharge.

8. Monitoring

The Discharger shall comply with the Contingency Planning and Notification Requirements Order No. 74-151 and the Notification, Monitoring, and Reporting Program No. R1-2002-0089 and any modifications to these documents as specified by the Executive Officer. Such documents are attached to this Order and incorporated herein. Chemical, bacteriological, and bioassay analyses must be conducted at a laboratory certified for such analyses by the State Department of Health Services.

a. Order No. 74-151 requires immediate incident reporting or unintentional or accidental spills (including Emergency Response actions) and diligent action to abate the effects of the discharge. Written confirmation of the incident is required within two weeks of notification.
b. General Monitoring and Reporting Provisions require sampling and analysis performance criteria in addition to compliance reporting criteria and timeframes.

9. Signatory Requirements

a. All Reports required to be submitted to the Regional Water Board shall be signed by either a principal executive officer, ranking elected official, or a responsible corporate officer. For purposes of this provision, a responsible corporate officer means:

A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. Reports required by this Order and other information requested by the Regional Water Board may be signed by a duly authorized representative provided:

i. the authorization is made in writing by a person described in paragraph (a) of this provision;

ii. the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an

individual or position having overall responsibility for environmental matters for the company; and

iii. the written authorization is submitted to the Regional Water Board prior to or together with any reports, information, or applications signed by the authorized representative.

c. Any person signing a document under paragraph (a) or (b) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

10. Inspections

The Discharger shall permit authorized staff of the Regional Water Board:

a. entry upon premises in which an effluent source is located or in which any required records are kept;
b. access to copy any records required to be kept under terms and conditions of this Order;
c. inspection of monitoring equipment or records; and
d. sampling of any discharge.

11. Noncompliance

In the event the Discharger is unable to comply with any of the conditions of this Order due to:

a. breakdown of waste treatment equipment;
b. accidents caused by human error or negligence; or
c. other causes such as acts of nature.

The Discharger must notify the Executive Officer by telephone as soon as he/she or his/her agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem and the dates thereof, and the steps being taken to prevent the problem from recurring.

12. Revision of Requirements

The Regional Water Board will review this Order periodically and may revise requirements when necessary.

Certification

I, Susan A. Warner, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on September 26, 2002.

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Susan A. Warner
Executive Officer

MAV:js/Calpine WDRs MOdification